The Detection and Measurement of Catatonia

by ROB KIRKHART, PhD, PA-C; NIRAJ AHUJA, MBBS, MD, MRCPsych; JOSEPH WY LEE, MBBS, MRCPsych, FRANSZCP; JOSE RAMIREZ, MD; REBECCA TALBERT, PharmD; KISHWER FAIZ, PA-C, MBBS; GABOR S. UNGVARI, MD, PhD; CHRISTOPHER THOMAS, PharmD, BCPP; and BRENDAN T. CARROLL, MD

AUTHOR AFFILIATIONS: Dr. Kirkhart is with the Department of Veteran Affairs Medical Center, Chillicothe, Ohio, and Clinical Professor, Marietta College, Marietta, Ohio; Dr. Ahuja is Consultant Psychiatrist, Northumberland, Tyne and Wear NHS Trust, United Kingdom, and Honorary Clinical Lecturer (Psychiatry), Newcastle University, United Kingdom; Dr. Lee is Clinical Senior Lecturer, University of Western Australia, Perth, Australia; Dr. Ramirez is Clinical Psychiatrist, Department of Veteran Affairs Medical Center, Chillicothe, Ohio; Dr. Talbert is Clinical Pharmacist, Riverside Methodist Hospital, Columbus, Ohio; Dr. Faiz is with the Department of Veterans Affairs Medical Center, Chillicothe, Ohio; Dr. Ungvari is Clinical Psychiatrist, Department of Psychiatry, Chinese University of Hong Kong; Dr. Thomasis Clinical Pharmacist, Department of Veterans Affairs Medical Center, Chillicothe, Ohio; and Dr. Carroll is Associate Professor (Volunteer) of Psychiatry, University of Cincinnati, Ohio, and Chief of Psychiatry Mental Health Care Line, Department of Veterans Affairs Medical Center, Chillicothe, Ohio.

ABSTRACT

Catatonia is a complex neuropsychiatric syndrome that occurs with primary psychiatric disorders or secondary to general medical conditions. Catatonia is often neglected when screening and examining psychiatric patients. Undiagnosed catatonia can increase morbidity and mortality, illustrating the need to effectively screen patients for presence of catatonia as well as their response to treatment. There are many barriers to the diagnosis of catatonia that may explain the low rates of diagnosis in modern psychiatry. This article will review the many barriers that exist in the detection, recognition, and diagnosis of catatonia. Various criteria and rating scales have been applied to catatonia. The lack of precise definitions and validity of catatonia has hindered the detection of catatonia, thus delaying diagnosis and appropriate treatment. This review article will illustrate the need for a new rating scale to screen and detect catatonia as it occurs in a variety of healthcare settings. This article will also review the characteristics such a scale should possess to produce a

ADDRESS CORRESPONDENCE TO: Rob Kirkhart, PhD, PA-C, 4155 Rowanne Rd., Columbus, OH 43214
Phone: (740) 773-1141 ext. 6599; Fax: (740) 772-7179; E-mail: robkirkhart@msn.com

KEY WORDS: catatonia, catatonia rating scale, detection, screening, barriers

quality instrument to aid in the appropriate care of the catatonic patient.

INTRODUCTION

Catatonia has been identified in a variety of psychiatric, medical and neurological disorders, and drug-induced states.[1] Various definitions have been applied to catatonia in medicine in general and clinical psychiatry in particular. The word *catatonia* is Greek for tension insanity, a concept developed by Kahlbaum to describe a new illness. His concept of catatonia was later marginalized by Kraepelian psychiatry to a subtype of schizophrenia and was largely ignored in most medical and psychiatric settings. The modern classification must include catatonia as it occurs on acute and chronic psychiatric units, emergency departments, intensive care units, nursing home settings, and outpatient clinics. The practical issue for a clinician in modern times is to determine whether the patient presents with catatonia.

In most clinical settings, systematic screening for depression, anxiety, suicidal risk, and substance abuse are commonly performed. However, scales to screen for catatonia in neuropsychiatric settings are often neglected. There is a practical value in detecting catatonia because lorazepam, electroconvulsive therapy (ECT), and other treatments have continued to demonstrate improvement in response and outcome. Failure to identify catatonia may result in increased morbidity and mortality.[2]

The problems with the detection and measurement of catatonia have been summarized by Caroff and Ungvari.[3] They assert that the psychopathology of catatonia requires further advances. Meanwhile the nosology of catatonia does not appear to be accounted for in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM-IV-TR) as well as the World Health Organization (WHO) *International Classification of Diseases* (ICD-10).[4] There are several catatonia rating scales using divergent definitions and a variable number of catatonic signs.[5] Signs, not symptoms, define catatonia. Catatonic signs must be elicited by examination but are usually not observed nor detected by a routine clinical interview. Treatment for catatonia is effective, but response to treatment in catatonia is hard to measure. The catatonia rating scales were developed to detect and measure the severity of catatonia but they may lack the sensitivity necessary to measure improvement. A search for newer treatment approaches to catatonia will require a rating scale that is sensitive to clinical improvement in catatonia without contaminating the rest of psychopathology.

BARRIERS TO THE DETECTION OF CATATONIA

We have identified the following barriers to the detection of catatonia. First, behavior problems are overemphasized in deference to motor disorders (signs). Consequently, patients who present with catatonia to a clinic or hospital will be treated as if they have a behavioral problem that is more important than the motor syndrome. Second, motor signs related to volition (will) are subject to psychological interpretations instead of careful observation and description (i.e., motor negativism may be interpreted as denial and nonadherence to treatment). Catatonic signs are often regarded as attention-seeking behavior. Longer periods of observation are necessary for some catatonic signs to emerge, making it difficult to detect or identify catatonia during a clinic visit or a short hospital stay.[6] A further confounding factor is that mental health professionals who spend the most time with patients are not taught how to recognize catatonic signs.[7] Third, many clinicians lack experience with the terms used to describe catatonia. And finally, psychiatric educators rarely include catatonic signs as an important component of their curriculum.

While there are several catatonia rating scales, these scales are not routinely taught or included in educational programs as valuable diagnostic instruments.[8] Although video and DVD images are excellent for education, research, and reliability, this important medium for the study of movement disorders has not been included in the application of teaching or reliability studies for catatonia rating scales.

Many clinicians believe that catatonia is not seen anymore. Consequently, those clinicians who are not familiar with the concept of catatonia do not diagnose nor treat catatonia.[9] In addition, there may be avoidance of clinically important treatments like lorazepam due to fears of addiction and ECT due to legal or other limitations, such as increased length of stay, cost of treatment, and the cost of procedures.[7] Catatonia may not be studied because of concerns about informed consent for clinical treatment and for research studies. The diagnosis of schizophrenia with catatonic features may be avoided in research settings.[10] Treatment guidelines have been developed for monolithic diagnoses, such as schizophrenia, depression, and bipolar disorder, without a particular focus on

...behavior problems are overemphasized in deference to motor disorders (signs). Consequently, patients who present with catatonia to a clinic or hospital will be treated as if they have a behavioral problem that is more important than the motor syndrome.

TABLE 1. Review of three criteria-based definitions[11,15,17]

	DSM-IV-TR		Bush/Francis		Fink-Taylor	
	LISTED	DEFINED	LISTED	DEFINED	LISTED	DEFINED
Mutism	+	-	+	+	+	+
Speech-promptness	-	-	-	-	+	C*
Gegenhalten (Paratonia)	-	-	+	+	+	C*
Rigidity	-	-	+	+	+	+
Mitgehen	-	-	+	+	-	-
Mitmachen	-	-	-	-	-	-
Catalepsy	+	C*	+	C#	+	C*
Waxy Flexibility	+	C*	+	+	+	+
Stereotypies	+	C*	+	+	+	C*
Mannerisms	+	C*	+	+	+	+
Grimacing	+	C*	+	+	+	+
Combativeness	-	-	+	+	+	+
Negativism	+	+	+	+	+	C*
Verbigeration	-	-	+	+	-	C#
Perseveration	-	-	+	+	-	-
Echolalia	+	+	+	+	+	+
Echopraxia	+	+	+	+	+	+
Posturing	+	C#	+	C*	+	C*
Automatic Abnormalities	-	-	+	+	+	+
Ambitendency	-	-	+	+	+	-
Grasp Reflex	-	-	+	+	-	-
Impulsivity	-	-	+	+	-	-
Automatic Obedience	+	-	+	+	+	+
Withdrawal (Refusal to eat/drink)	-	-	+	+	+	C#
Stupor	+	C*	+	C*	+	C*
Palilalia	-	-	-	-	+	C*
Immobility	+	C*	+	C*	+	C*
Excitement	+	+	+	+	+	+

+ = yes; - = no; C* = contradictory includes divergent terms; C# = contradictory over inclusive

Results of clear and unambiguous descriptions of 28 terms used to define or describe catatonia:
DSM-IV-TR = 4 circumscribed and defined terms (14.3%); Bush-Francis = 21 circumscribed and defined terms (75%); Fink & Taylor = 11 circumscribed and defined terms (39.3%)

catatonic features.

BARRIERS TO RECOGNITION OF CATATONIA

The recognition of catatonic features by criteria used to define catatonia has been found to be inadequate.[9] Catatonia can be recognized by the presence of two or more catatonic signs.[11,12] However, many of these catatonic signs have not been included in DSM-IV-TR. Recognition of catatonia requires application of a rating scale for catatonia.[9] It now appears that screening populations of patients for two or more catatonic signs with a structured instrument is necessary for recognition of catatonia.[13] Studies using standardized screening instruments for catatonic signs found higher prevalence than those relying on less direct methods, such as diagnostic codes.[4,9,14]

The severity of catatonic signs has been addressed in rating scales, but not in DSM-IV-TR.[15] The catatonic signs that require acute treatment including stupor, combativeness, refusal to eat, and excitement are not emphasized. Patients presenting with the following catatonic signs would not be admitted or treated if one followed DSM-IV-TR criteria; these include echopraxia, peculiarities of speech, stereotypies, mannerisms, and grimacing. Consequently, the catatonic signs listed in DSM-IV-TR are not the catatonic signs that are the targets of treatment. It is important to remember that clinicians' goal is not the quest of knowledge itself but the ability to use their available knowledge and skills to prevent and diminish the suffering and disability of their patients.[16]

BARRIERS TO THE VALIDITY OF CATATONIA

The terminology used in the diagnostic criteria for catatonic schizophrenia has been a concern and may include 5 to 57 signs.[5] We reviewed the criteria and terminology used in DSM-IV-TR for catatonic features, the Bush-Francis Catatonia Rating Scale (BFCRS), and a book written on the subject (Fink-Taylor criteria).[17] We found 28 terms used in the diagnosis of catatonia. Clear and unambiguous descriptions of terms were as follows: DSM-IV-TR=4 (14.3%), Bush-Francis Scale=21 (75%), Fink & Taylor=11 (39.3%) (Table 1).[11,15,17] These figures support the need for development of a new, comprehensive neuropsychiatric motor rating scale with clearly defined terms to diagnose catatonia. We found low concurrent validity in criteria terminology and suggest that a new approach to detection of catatonia is warranted.

THE NEED FOR A NEW CATATONIA RATING SCALE

Since its publication, the BFCRS has been one of the most widely used catatonia rating scales.[11] However, we have encountered several difficulties using the scale for determining the presence of catatonia. First, it lacks uniformity in its reference definitions as noted in Table 1. Second, the BFCRS signs are not always specific (e.g., item 2: immobility/stupor). Third, while the BFCRS can be used to measure treatment response we have found that items 17 through 23 may still be present even after patients have improved clinically. Some patients would still score 3 to 12 points even when clinical improvement has occurred.

The scores of items 1 through 17 may not be weighted sufficiently to detect treatment effects. There are several important signs seen in catatonic patients that are not included. Some of the terms are not comprehensible to North American researchers (e.g., psychiatrists and other clinicians who are not familiar with catatonia research). There is a need to replace these terms with more common and easily understandable terms or to provide concise and clear definitions.

We recommend that the BFCRS continues to be used as it is the best-studied catatonia rating scale (at least in North America). The North American published work on catatonia has usually relied upon the BFCRS, the Rosebush criteria, the Lohr and Wiesniewski criteria, the Fink and Taylor criteria, and the DSM-IV-TR criteria.[11,15,17–19] The published work on catatonia from Europe has often used Kleist and Leonhard's concept, the Northoff Scale, and Catatonia Rating Scale.[20–22] However these scales and criteria lack consistent reference definitions and maintain fundamental disagreement on the concepts that underlie catatonia.

Perhaps the European catatonia rating scales could provide improved detection, recognition, and measurement of treatment response and provide options for research into catatonia. Alternately, the BFCRS could be modified to improve its use in future studies of catatonia. Finally, a new scale could be developed and compared against the BFCRS. This new scale could benefit from the decade of studies using the BFCRS and from the development of other scales.

CONCLUSION

Catatonia is a movement disorder as well as a neuropsychiatric syndrome; thus, a catatonia rating scale is akin to a movement disorder examination. The catatonia rating scale must detect patients who may exhibit catatonia and identify catatonic signs reliably. We recommend that a new catatonia rating scale be used in a variety of clinical settings to detect, identify, and measure catatonia and its response to treatment among a population of at-risk patients. Such a scale must include reference definitions and should avoid unfamiliar and confusing historical terms. As demonstrated by Stompe and colleagues, the detection of catatonia can be improved if the clinician relies on a greater number of specific signs with precise reference definitions.[5] Finally, any new catatonic scale must be able to detect clinically significant differences with effective treatment with greater sensitivity for clinical changes.

ACKNOWLEDGMENT

The authors would like to thank Harold W. Goforth, MD, of Duke University; Durham, North Carolina, for editorial assistance.

REFERENCES

1. Bhati M, Dotti C, O'Reardon J.

Clinical manifestations, diagnosis, and empirical treatments for catatonia. *Psychiatry* 2007;4(3):46–51.
2. Swartz C, Galang RL. Adverse outcome with delay in identification of catatonia in elderly patients. *Am J Geriatr Pyschiatry* 2001;9:78–80.
3. Caroff SN, Ungvari GS. Expanding horizons in catatonia research. *Psychiatr Ann* 2007;37(1):7–9.
4. Taylor MA, Fink M. Catatonia in psychiatric classification: A home of its own. *Am J Psychiatry* 2003;160:1233–41.
5. Stompe T, Ritter K, Schanda H. Catatonia as a subtype of schizophrenia. *Psychiatr Ann* 2007;37(1):31–6.
6. Ungvari GS, Carroll B. Nosology of catatonia: From psychopathology to neurobiology. In: Caroff S, Mann S, Francis A, Fricchione G (eds). *Catatonia.* Washington DC: American Psychiatric Press, Inc., 2004:33–43.
7. Dhossche D, Wing L, Ohta M, Neumarker K (eds). *Catatonia in Autism Spectrum Disorders, International Review of Neurobiology Volume 72.* New York, NY: Elsevier/Academic Press, 2006.
8. Caroff SN, Mann SC, Francis A, Fricchione GE (eds). *Catatonia: From Psychopathology to Neurobiology.* Washington, DC: American Psychiatric Press, Inc., 2004.
9. van der Heijden FM, Tuinier S, Arts NJ, et.al. Catatonia: Disappeared or under-diagnosed? *Psychopathology* 2005;38:3–8.
10. Kahn AY, Preskorn SH, Baker B. Effect of study criteria on recruitment and generalizability of the results. *J Clin Psychopharmacol* 2005;25:271–5.
11. Bush G, Fink M, Petrides G, et. al. Catatonia I: Rating scale and standardized examination. *Acta Psychiatr Scand* 1996;93:129–36.
12. Lee JW, Schwartz DL, Hallmayer J. Catatonia in an intensive care facility: Incidence, and response to benzodiazepines *Ann Clin Psychiatry* 2000;12:89–96.
13. Chalssani P, Healy D, Morriss R. Presentation and frequency of catatonia in new admission to two acute psychiatric admission units in India and Wales. *Psychol Med* 2005;35(11):35–46.
14. Braunig P, Kruger S, Shugar G. Prevalence and clinical significance of catatonic symptoms in mania. *Compr Psychiatry* 1998;39(1):35–46.
15. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition Text Revision.* Washington, DC: American Psychiatric Press, Inc, 2002.
16. Aboraya A, France C, Young J, et.al. The validity of psychiatric diagnosis revisited: The clinician's guide to improve the reliability of psychiatric diagnosis. *Psychiatry* 2005;2:48–56.
17. Fink M, Taylor MA. *Catatonia: A Clinician's Guide to Diagnosis and Treatment.* Cambridge, UK: Cambridge University Press, 2003.
18. Rosebush PI, Hildebrand AM., Furlong BG, Mazurek MF. Catatonic syndrome in a general psychiatric population: Frequency, clinical presentation and response to lorazepam. *J Clin Psychiatry* 1990;51:357–62.
19. Lohr J, Wisniewski A. *Movement Disorders: A Neuropsychiatric Approach.* New York, NY: Guilford Press, 1987.
20. Leonhard K. *The Classification of Endogenous Psychoses, Fifth Edition.* New York, NY: Irvington Publications, 1979.
21. Northoff G, Cock A, Wenke J, et al. Catatonia as a psychomotor movement syndrome: A rating scale and extrapyramidal motor symptoms. *Move Disord* 1999;14:404–16.
22. Braunig P, Kruger S, Shugar G, et al. The catatonia rating scale I: Developments, reliability and use. *Compr Psychiatry* 2000;41:147–58.